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09/840,481

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Armando J. Vigil

"PRO SE"

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11/04/2004

Christopher F. Regan

ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A.

1401 Citrus Center 255 South Orange Avenue

P.O. Box 3791

Orlando,, FL 32802-3791

EXAMINER

TRAN, TRANG U

ART UNIT

PAPER NUMBER

2614

DATE MAILED: 11/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/840,481

Applicant(s)

VIGIL ET AL.

Examiner

Trang U. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2004 and 10 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Response to Arguments

2. Applicant's arguments filed Sept. 10, 2004 have been fully considered but they are not persuasive.

In re pages 7-11, applicants argue that the claimed invention is patentable over Grabb et al in view of Twitchell et al because Grabb et al discloses using detected correlation peaks in the received digital television signal based upon the overlay signal (i.e., reference data) provided by the wideband overlay sequence generator 103, but Grabb et al fails to teach or suggest multiplexing the overlay signal with the digital television signal prior to being modulated while the ancillary data 112 multiplexed with the digital television signals in Twitchell et al does not have anything to do with mitigating multipath and Twitchell et al also discloses a channel coder 120 for adding additional information to the modulated digital television signal that may be used by the receiver to reconstruct the data affected by typical transmission interference sources, such as multipath.

In response, the examiner respectfully disagrees. As recognized by applicants that Grabb et al discloses a similar concept of using detected correlation peaks in the received digital television signal based upon **the overlay signal** (i.e., reference data) provided by the wideband overlay sequence generator 103, but Grabb et al fails to

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teach or suggest multiplexing the overlay signal with the digital television signal prior to being modulated.

Twitchell et al teaches in the RF/Transmission section 106 the packeted data is channel coded and modulated, **the channel coder 120 may modify the data stream and add additional information** that can be used by the receiver to reconstruct the data from a received signal which has been affected by typical transmission interference signal prior to modulating (the modulation 122 of Twitchell et al modulates the output of the channel coder 120, col. 3, lines 57-67).

It is noted that the additional data of Twitchell et al can be an overlay signal. Applicants cannot show non-obviousness by attacking the references individually where, as here, the rejection is based on a combination of references. In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). A reference must be considered not only for what it expressly teaches, but also for what it fairly suggests. In re Burckel, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979). The artisan is presumed to know something about the art apart from what references literally disclose. In re Jacoby, 309 F.2d 513, 135 USPQ 317 (CCPA 1962). The examiner believes that the artisan would have recognized the obviousness of **the channel coder 120 may modify the data stream and add additional information** that can be used by the receiver to reconstruct the data from a received signal which has been affected by typical transmission interference signal prior to modulating and modulating the digital data signal for transmission.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 25-42 and 44-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grabb et al. (US Patent No. 6,437,832 B1) in view of Twitchell et al (US Patent No. 6,335,766 B1).

In considering claim 25, Grabb et al et al discloses all the claimed subject matter, note 1) the claimed receiving a transmitted DTV signal is met by the antenna 106 (Fig. 1, col. 4, lines 55-57), 2) the claimed detecting correlation peaks in the received DTV signal based upon the multiplexed reference data is met by the cross-correlator 108 which detects a cross-correlation spike from the cross-correlator every 4095 clock times for the m-sequence generator (Fig. 1, col. 4, line 55 to col. 5, line 65), and 3) the claimed using the detected correlation peaks to mitigate multipath in the received DTV signal is met by the phase adjuster 110 which adjusts the phase of the locally generated overlay signal by retarding or advancing the clocking of the locally generated overlay signal maximize the largest peak of the signal from cross-correlator 108 (Fig. 1, col. 4, line 55 to col. 5, line 65).

However, Grabb et al explicitly do not disclose the claimed multiplexing reference data with DTV data to generate a multiplexed DTV data stream and modulating the multiplexed DTV data stream for transmission.

Twitchell et al teaches in the RF/Transmission section 106 the packeted data is channel coded and modulated, **the channel coder 120 may modify the data stream and add additional information** that can be used by the receiver to reconstruct the data from a received signal which has been affected by typical transmission interference signal prior to modulating (the modulation 122 of Twitchell et al modulates the output of the channel coder 120, col. 3, lines 57-67).

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the channel coder and the modulation as taught by Twitchell et al into Grabb et al's system in order to facility for the packetizing and multiplexing of video, audio and data signals for digital broadcast system and converted to the RF signal for transmitted signal.

In considering claim 26, the claimed wherein the transmitted DTV signal includes a training sequence defined by the reference data is met by the m-sequence overlay signal generator (Fig. 3, col. 4, lines 22-45 and col. 5, line 66 to col. 6, line 54 of Grabb et al).

In considering claim 27, the claimed wherein the reference data is ATSC DTV compliant is met by col. 2, lines 38-57 of Grabb et al.

In considering claim 28, the claimed wherein the reference data is based upon a priori knowledge of the DTV data is met by the m-sequence overlay signal generator (Fig. 3, col. 4, lines 22-45 and col. 5, line 66 to col. 6, line 54 of Grabb et al).

In considering claim 29, the claimed wherein the a priori knowledge includes modulation characteristics of the DTV data is met by the m-sequence overlay signal generator (Fig. 3, col. 4, lines 22-45 and col. 5, line 66 to col. 7, line 12 of Grabb et al).

In considering claim 30, the claimed further comprising estimating the modulation characteristics of the DTV data is met by cross-correlator which generates an estimate of the impulse response of the DTV channel by presenting the multipath components and strengths (Fig. 6, col. 5, line 21 to col. 7, line 12 of Grabb et al).

In considering claim 31, Grabb et al discloses all the claimed subject matter, note 1) the claimed estimating modulation characteristics of DTV data to be transmitted is met by cross-correlator which generates an estimate of the impulse response of the DTV channel by presenting the multipath components and strengths (Fig. 6, col. 5, line 21 to col. 7, line 12), and 2) the claimed determining reference data based upon the estimated modulation characteristics of the DTV data is met by the m-sequence overlay signal generator (Fig. 3, col. 4, lines 22-45 and col. 5, line 66 to col. 7, line 12). However, Grabb et al explicitly do not disclose the claimed multiplexing the reference data with the DTV data to generate a multiplexed DTV data stream and modulating the multiplexed DTV data stream for transmission.

Twitchell et al teaches in the RF/Transmission section 106 the packeted data is channel coded and modulated, **the channel coder 120 may modify the data stream and add additional information** that can be used by the receiver to reconstruct the data from a received signal which has been affected by typical transmission interference

signal prior to modulating (the modulation 122 of Twitchell et al modulates the output of the channel coder 120, col. 3, lines 57-67).

Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the channel coder and the modulation as taught by Twitchell et al into Grabb et al's system in order to facility for the packetizing and multiplexing of video, audio and data signals for digital broadcast system and converted to the RF signal for transmitted signal.

Claims 32-34 are rejected for the same reason as discussed in claims 25-27, respectively.

Claims 35-40 are rejected for the same reason as discussed in claims 25-30, respectively.

In considering claim 41, the claimed wherein said receiving system comprises a digital television is met by the DTV (Fig. 1).

Claim 42 is rejected for the same reason as discussed in claim 25.

Claims 44-47 are rejected for the same reason as discussed in claims 26-29, respectively.

5. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grabb et al. (US Patent No. 6,437,832 B1) in view of Twitchell et al (US Patent No. 6,335,766 B1) and further in view of Frey et al. (US Patent No. 6,304,299 B1).

In considering claim 43, the combination of Grabb et al and Twitchell et al disclose all the limitations of the instant invention as discussed in claims 25 and 42 above, except for providing the claimed further comprising a demodulator connected to

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said correlator for demodulating the receiving DTV signal. Frey et al teach that in Fig. 1, the transmitted signal is received by receive antenna 106 which, in turn, supplies the received signal to a receiver 107, antenna 106 and receiver 107 receive and demodulate the received signal to provide demodulated signal 18 (Fig. 1, col. 4, lines 10-24). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the demodulator as taught by Frey et al into the combination of Grabb et al and Twitchell et al's system in order to convert the RF signal to the base band signal of the video signal to be transmitted.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trang U. Tran whose telephone number is (703) 305-0090. The examiner can normally be reached on 8:00 AM - 5:30 PM, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John W. Miller can be reached on (703) 305-4795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TT TT
November 1, 2004


JOHN MILLER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600